

What is claimed is:

1. A method for word synchronization between a first word device and a second word device, the first word device and the second word device each being unsynchronized, the first word device and the second word device each including a plurality of serializers and a plurality of deserializers, the serializers of the first word device being connected to the deserializers of the second word device by a plurality of serial lines, and the serializers of the second word device being connected to the deserializers of the first word device by a plurality of serial lines, the method comprising:

transmitting a synchronization request on the plurality of serial lines from the serializers of the first device to the deserializers of the second device;

becoming synchronized at the second device in response to the synchronization request from the first device;

transmitting a synchronization request on the plurality of serial lines from the serializers of the second device to the deserializers of the first device;

becoming synchronized at the first device in response to the synchronization request from the second device; and

transmitting data on the plurality of serial lines from the serializers of the first device to the deserializers of the second device after the first device has become synchronized in response to the request for synchronization from the synchronized second device.

2. The method of claim 1, further comprising: transmitting data on the plurality of serial lines from the serializers of the second device to the deserializers of the first device after the synchronized second device has received data transmitted from the first device.

3. The method of claim 1, further comprising: becoming unsynchronized at the first device in response to receiving a loss of synch signal from at least one of the deserializers of the first device.

4. The method of claim 1, further comprising:  
detecting at the second device a bad control word that is inconsistent across the deserializers of the second device; and  
transmitting a synchronization request on the plurality of serial lines from the serializers of the second device to the deserializers of the first device after the second device has detected the bad control word.

5. The method of claim 1, wherein the serializers and the deserializers of the first and second devices satisfy a SERDES specification for control characters.

6. The method of claim 5, further comprising:  
detecting at the second device a bad control word that is inconsistent across the deserializers of the second device; and  
transmitting a synchronization request on the plurality of serial lines from the serializers of the second device to the deserializers of the first device after the second device has detected the bad control word.

7. The method of claim 1, wherein the serial lines are fiber optics.

8. The method of claim 1, wherein a ribbon fiber includes the serial lines.
9. A method for word synchronization between a first word device and a second word device, the first word device being unsynchronized, the second word device being synchronized, the first word device and the second word device each including a plurality of serializers and a plurality of deserializers, the serializers of the first word device being connected to the deserializers of the second word device by a plurality of serial lines, and the serializers of the second word device being connected to the deserializers of the first word device by a plurality of serial lines, the method comprising:
- transmitting a synchronization request on the plurality of serial lines from the serializers of the second device to the deserializers of the first device;
  - becoming synchronized at the first device in response to the synchronization request from the second device;
  - transmitting data on the plurality of serial lines from the serializers of the first device to the deserializers of the second device after the first device has become synchronized in response to a request for synchronization from the synchronized second device.
10. The method of claim 9, further comprising: transmitting data on the plurality of serial lines from the serializers of the second device to the deserializers of the first device after the synchronized second device has received data transmitted from the first device.

11. The method of claim 9, further comprising: becoming unsynchronized at the first device in response to receiving a loss of synch signal from at least one of the deserializers of the first device.

12. The method of claim 9, further comprising:

detecting at the second device a bad control word that is inconsistent across the deserializers of the second device; and

transmitting a synchronization request on the plurality of serial lines from the serializers of the second device to the deserializers of the first device after the second device has detected the bad control word.

13. The method of claim 9, wherein the serializers and the deserializers of the first and second devices satisfy a SERDES specification for control characters.

14. The method of claim 13, further comprising:

detecting at the second device a bad control word that is inconsistent across the deserializers of the second device; and

transmitting a synchronization request on the plurality of serial lines from the serializers of the second device to the deserializers of the first device after the second device has detected the bad control word.

15. The method of claim 9, wherein the serial lines are fiber optics.

16. The method of claim 9, wherein a ribbon fiber includes the serial lines.

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17. A method for word synchronization between a plurality of word devices connected by a plurality of serial lines, comprising the steps of:

requesting synchronization from a first device to a second device when the first device does not have synchronization;

requesting synchronization from a first device to a second device when the first device has synchronization;

receiving a request for synchronization at a first device from a second device, the first device then becoming synchronized;

transmitting data from a first device to a second device, the first device being synchronized, the first device having received from the second device a synchronization signal indicating that the second device is synchronized;


18. The method of claim 17, wherein, in the step of transmitting data, the synchronization signal includes at least one of a synchronization request from the synchronized second device and a start-of-packet indicator from data transmitted by the second device.

19. The method of claim 17, further comprising: becoming unsynchronized at a device in response to receiving a loss-of-synch signal.

20. The method of claim 19, wherein the loss-of-synch signal is generated by a deserializer included in the device.

21. The method of claim 17, further comprising:  
detecting a bad control word at a first device from a second device; and  
requesting synchronization from a first device to a second device, the first device having received a bad control word from the second device.

22. The method of claim 17, wherein  
the word units include serializers and deserializers that satisfy a SERDES specification for control characters,  
a bad control word received by a device is inconsistent across deserializers of the device.

 23. A method for detecting and adapting to a loss of word synchronization at a first word device, the first word device being synchronized and connected to a second word device by a plurality of serial lines, the method comprising: becoming unsynchronized at the first device in response to receiving a loss of synch signal from at least one of the serial lines connected to the second device.

24. The method of claim 23, wherein  
the first word device and the second word device each include a plurality of serializers and deserializers;  
the serial lines connect the serializers of the first word device to the deserializers of the second word device and the serializers of the second word device to the deserializers of the first word device; and

the serializers and the deserializers of the first and second devices satisfy a SERDES specification for control characters.

25. The method of claim 23, further comprising: becoming unsynchronized at the first device in response to receiving a threshold number of bad control words from the serial lines connected to the second device, wherein consecutive bad control words are not separated by a synchronized data packet.

26. The method of claim 25, wherein the threshold number of bad control words is one.

27. The method of claim 25, wherein the threshold number of bad control words is greater than one.

28. The method of claim 25, wherein  
the first word device and the second word device each include a plurality of serializers and deserializers;  
the serial lines connect the serializers of the first word device to the deserializers of the second word device and the serializers of the second word device to the deserializers of the first word device; and  
the serializers and the deserializers of the first and second devices satisfy a SERDES specification for control characters.

29. The method of claim 28, wherein the threshold number of bad control words is one.

30. The method of claim 28, wherein the threshold number of bad control words is greater than one.

31. A method for detecting and adapting to a loss of word synchronization at a first word device, the first word device being synchronized and connected to a second word device by a plurality of serial lines, the method comprising: becoming unsynchronized at the first device in response to receiving a threshold number of bad control words from the serial lines connected to the second device, wherein consecutive bad control words are not separated by a synchronized data packet.

32. The method of claim 31, wherein the threshold number of bad control words is one.

33. The method of claim 31, wherein the threshold number of bad control words is greater than one.

34. The method of claim 31, wherein  
the first word device and the second word device each include a plurality of serializers and deserializers;  
the serial lines connect the serializers of the first word device to the deserializers of the second word device and the serializers of the second word device to the deserializers of the first word device; and  
the serializers and the deserializers of the first and second devices satisfy a SERDES specification for control characters.

35. The method of claim 34, wherein the threshold number of bad control words is one.
36. The method of claim 34, wherein the threshold number of bad control words is greater than one.
37. A method for confirming word synchronization at a first word device, the first word device being actively synchronized and connected to a second word device by a plurality of serial lines, the method comprising: detecting a confirming control word from the serial lines connected to the second device, wherein the second device separates the transmission of confirming control words by a threshold number of intervening words.
38. The method of claim 37, wherein the threshold number of intervening words is sufficient to prevent an unsynchronized reception of the designated control word at the first word device.
39. The method of claim 37, wherein
- the first word device and the second word device each include a plurality of serializers and deserializers;
- the serial lines connect the serializers of the first word device to the deserializers of the second word device and the serializers of the second word device to the deserializers of the first word device; and
- the serializers and the deserializers of the first and second devices satisfy a SERDES specification for control characters.

40. The method of claim 39, wherein the threshold number of intervening words is sufficient to prevent an unsynchronized reception of the designated control word at the first word device.

41. The method of claim 39 wherein the confirming control word is also used as a framing indicator.